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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,419	06/20/2003	Hongxin Song	MP0275	6709
26200	7590	06/29/2006	EXAMINER	
FISH & RICHARDSON P.C. P.O BOX 1022 MINNEAPOLIS, MN 55440-1022			RIZK, SAMIR WADIE	
			ART UNIT	PAPER NUMBER
			2133	

DATE MAILED: 06/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/600,419

Applicant(s)

SONG ET AL.

Examiner

Sam Rizk

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-52 and 64-75 is/are allowed.
- 6) ☒ Claim(s) 1-21 and 53-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/20/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***DETAILED ACTIONS***

- Amended claims 1-75 have been submitted for examination
- Amended claims 1-21 and 53-63 have been rejected
- Amended claims 22-52 and 64-75 have been allowed

***Information Disclosure Statement***

1. In view of the applicant explanation of the missing details of IDS filed 6/20/2003, the Examiner withdraws all previous objections to the IDS filed 6/20/2003. Copy of the signed IDS is included in the office action.

***Claim Rejections - 35 USC § 101***

2. In view of the applicant arguments filed 3/29/2006 the Examiner withdraws all previous rejections of claims 45-52 under section 35 USC § 101.

***Claim Rejections - 35 USC § 112***

3. In view of the applicant amendment of claims 2 and 31 filed 3/29/2006, the Examiner withdraws all previous rejections of claims 2 and 31 under section 35 USC § 112.

***Response to Arguments***

4. Applicant's arguments, see pages 25-75, filed 3/29/2006, with respect to the rejection(s) of claim(s) 1-75 under section 35 USC § 112 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Bliss et al. US patent no. 6009549 (Hereinafter Bliss).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-21 and 53-63 are rejected under 35 U.S.C. 102(b) as being anticipated by Bliss et al. US patent no. 6009549 (Hereinafter Bliss).
6. In regard to claim 1, Bliss teaches:
- (Original) A signal processing apparatus comprising:  
(Note: FIG. 4 in Bliss)
  - an input to receive a signal  
(Note: FIG. 4, reference sign (54) in Bliss)
  - a buffer responsive to the input to store the signal;  
(Note: FIG 4, reference sign (34) in Bliss)

- a detector responsive to the input to interpret the signal as discrete values; and

(Note: FIG. 4, reference signs (40,44,46,48) in Bliss)

- an averaging circuit responsive to the buffer and the detector to cause interpretation, by the detector during a retry mode, of a new signal comprising an average of a previous signal stored in the buffer and a current signal.

(Note: col. 16, lines (23-28) in Bliss)

7. In regard to claim 2, Bliss teaches:

- (currently amended) The apparatus of claim 1, wherein the signal from the input comprises a read signal received from a storage medium.

(Note: title in Bliss)

8. In regard to claim 3, Bliss teaches:

- (currently amended) The apparatus of claim 1, wherein the signal from the input comprises an analog signal, the apparatus further comprising a filter and an analog-to-digital converter (ADC) coupled between the input and the detector.

(Note FIG. 6, reference signs (98) and (108) in Bliss)

9. In regard to claim 4, Bliss teaches:

- (original) The apparatus of claim 3. wherein the buffer is coupled between the ADC and the filter.

(Note: FIG. 6, reference sign (104) in Bliss)

10. In regard to claim 5, Bliss teaches:

- (original) The apparatus of claim 3, wherein the buffer is coupled between the filter and the detector.

(Note: FIG. 4, reference sign (34) in Bliss)

11. In regard to claim 6, Bliss teaches:

- (original) The apparatus of claim 3, wherein the filter comprises a finite impulse response (FIR) digital filter coupled between the ADC and the detector.

(Note: col. 9, lines (62-63) in Bliss)

12. In regard to claim 7, Bliss teaches:

- (original) The apparatus of claim 1, further comprising an error correction circuit responsive to the detector and the averaging circuit to provide a signal quality metric that governs which signals are averaged.

(Note: FIG. 4, reference sign (48) in Bliss)

13. In regard to claim 8, Bliss teaches:

- The apparatus of claim 1, wherein the detector comprises a Viterbi detector.

(Note; col. 7, line 18 in Bliss)

14. In regard to claim 9, Bliss teaches:

- (original) The apparatus of claim 1, further comprising a control circuit that determines whether the discrete values are adequately indicated

based on comparison of interpretations of the new averaged signal and the current signal.

(Note: col. 16, lines (37-46) in Bliss)

15. In regard to claim 10, Bliss teaches:

- (currently amended) The apparatus of claim further control circuit that causes averaging of a comprising a defined number of most recent input signals, wherein the defined number is greater than two.

(Note: col. 16, lines (44-46) in Bliss)

The Examiner notes the Bliss teaches the iterative process **continues** until the number of error in the sector is within the error correction limits of the ECC. This process would continue greater than two samples.

16. In regard to claim 11, Bliss teaches:

- (original) The apparatus claim 1, further comprising a control circuit that causes the previous signal stored in the buffer to be an averaged input signal when two or more signals are obtained in the retry mode.

(Note: col. 16, lines (44-46) in Bliss)

17. In regard to claim 12, Bliss teaches:

- (original) A storage device, comprising:

(Note: Title in Bliss)

- a storage medium;

(Note: FIG.4 in Bliss)

- a head assembly operable to generate a read signal from the storage medium;

(Note: FIG. 4, reference sign \*54) in Bliss)

- a buffer that saves the read signal generated by the head

(Note: FIG. 6, reference sign (104) in Bliss)

- a detector interprets the read signal as discrete values;

(Note FIG. 6, reference sign (108) in Bliss)

- an averaging circuit responsive to the buffer and the detector; and

(Note: col. 16, lines (23-28) in Bliss)

- a control circuit responsive to the averaging circuit to cause interpretation by the detector in a retry mode of a new read signal comprising an average stored in the buffer and a current previous read signal read signal .

(Note: FIG. 4,reference sign (36) in Bliss)

18. Claims 13, 55 are rejected for the same reasons as per claim 3.
19. Claim 14, 56 are rejected for the same reasons as per claim 4.
20. Claim 15, 57 are rejected for the same reasons as per claim 5.
21. Claim 16, 58 are rejected for the same reasons as per claim 6.
22. Claim 17, 59 are rejected for the same reasons as per claim 7.
23. Claim 18, 60 are rejected for the same reasons as per claim 8.
24. Claim 19, 61 are rejected for the same reasons as per claim 9.
25. Claim 20, 62 are rejected for the same reasons as per claim 10.



- 26. Claim 21, 63 are rejected for the same reasons as per claim 11.
- 27. Claim 53 is rejected for the same reasons as per claim 1.
- 28. Claim 54 is rejected for the same reasons as per claim 2.

***Allowable Subject Matter***

- 29. Claims 22-52 and 64-75 are allowed.

The following is an examiner's statement of reasons for allowance:

- 30. In regard to claim 22, the prior art of record, in particular Bliss, teaches:
  - A method comprising:
  - interpreting an input signal as discrete values; and
  - in response to an inadequate signal, averaging multiple signals to improve interpretation of the input signal;

However, the prior arts are not concerned with and do not teach:

- wherein the multiple signals comprise separate signals, **representing same data, obtained at different times**

Hence the prior art taken alone or in any combination fail to teach the claim novel

- 31. Claims 23-33 depend from claim 1.
- 32. Claims 34 , 45 and 64 have similar language to claim 22.
- 33. Claims 35-44 depend from claim 34
- 34. Claims 46-52 depend from claim 45
- 35. Claims 65-75 depend from claim 64

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

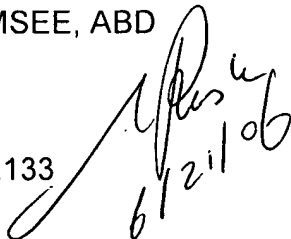
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk, MSEE, ABD

Examiner

ART UNIT 2133



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